

Project Number:	634
Category:	Environmental Issues
Date:	January 2010
Subject:	<i>Mitigation of Underwater Pile Driving Noise during Offshore Construction</i>
Performing Activity:	Applied Physical Sciences (APS) Corp.
Principal Investigator:	D. Harwick
Contracting Agency:	Bureau of Safety and Environmental Enforcement
Summary:	The purpose of this study was to establish the relative importance of primary transmission paths of noise generated by pile driving of large monopiles offshore and to assess the relative potential effectiveness of mitigation options. A high fidelity acoustic model was used for different water depths (comparable to the Cape Wind project site) and measurements were taken in the seabed, water, and air, and with the use of mitigation measures (e.g., bubble screen, surface treatment, and dewatered cofferdam).
Key Findings:	<ul style="list-style-type: none"> • The water pathway dominates noise in nearly all cases. • Bubble screen and compliant surface treatment (rubber foam) were predicted to reduce noise levels by about 10 dB. • Dewatered cofferdam was predicted to reduce noise levels by 20 dB and was considered to be upper bound on mitigation measures.
Recommendations:	<ul style="list-style-type: none"> • Noise mitigation measures should focus on the water pathway. • Dewatered cofferdam is the most effective mitigation measure.
Subsequent Studies/Activities:	<ul style="list-style-type: none"> • Field studies should be conducted to confirm the study's findings (recent field studies in the North Sea showed that bubble curtain reduced noise levels by 13 dB). • Ongoing research on North Sea wind farm projects should be evaluated for mitigation improvement, including confined bubble curtains, and the use of other noise damping materials. • The use of vibratory hammers to reduce noise impact should be evaluated.
Report Link:	AA : Mitigation of Underwater Pile Driving Noise During Offshore Construction: Final Report, 27 January 2010, by Applied Physical Sciences, Groton, CT